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IS 3512 (1966): Toolmakers' Straightedges [PGD 25:
Engineering Metrology]



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IS : 3512 - 1966

Indian Standard
**SPECIFICATION FOR
TOOLMAKERS' STRAIGHTEDGES**

REAFFIRMED

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**INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG**

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AMENDMENT NO. 1 OCTOBER 1978

TO

**IS : 3512-1966 SPECIFICATION FOR
TOOLMAKERS' STRAIGHTEDGES**

Alterations

(*Page 3, clause 2.3*) — Substitute the following for the existing clause:

‘2.3 The hardness of the finished straightedges, measured adjacent to the working edge, shall be $650 \pm 50 \text{ HV}$ (*see IS : 1501-1968†*).

(*Page 3, foot-note with ‘† mark*) — Substitute the following for the existing foot-note:

‘†Method for Vickers hardness test for steel (*first revision*).’

(*Page 4, foot-note with ‘** mark*) — Substitute the following for the existing foot-note:

‘**Specification for tool makers' flats and high precision surface plates.’

(EDC 43)

Indian Standard

SPECIFICATION FOR TOOLMAKERS' STRAIGHTEDGES

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Indian Standard

SPECIFICATION FOR TOOLMAKERS' STRAIGHTEDGES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 April 1966, after the draft finalized by the Engineering Metrology Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 In preparing this standard, considerable assistance has been derived from B.S. 852:1939 'Toolmakers' straightedges' issued by the British Standards Institution.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This specification covers the requirements of toolmakers' straightedges of short length, from 15 mm to 300 mm, intended for very accurate work, and having one working edge, which is bevelled and very slightly rounded off (commonly known as a 'knife-edge').

2. MATERIAL

2.1 The straightedges shall be made from any suitable cast or wrought alloy steel free from defects.

2.2 The straightedges shall be hardened and suitably heat-treated to remove the internal stresses resulting from the hardening process and to give stability.

2.3 The hardness of the finished straightedges, measured adjacent to the working edge, shall be 650 ± 50 HV (see IS: 1501-1959†).

*Rules for rounding off numerical values (*revised*).

†Method for Vickers hardness test for steel.

3. DIMENSIONS

3.1 The typical sections of straightedges shall be as shown in Fig. 1.

3.2 The recommended dimensions of the straightedges are as follows:

<i>Length</i>	<i>Width</i>	<i>Thickness of Flat Portion</i>
mm	mm	mm
15	15	3
25	25	6
50	30	8
75	35	8
100	40	10
150	40	10
200	50	12
250	50	12
300	60	12

4. GENERAL REQUIREMENTS

4.1 The faces adjoining the working edge (*see* Fig. 2) may be ground flat or may be hollow ground.

4.2 The working edge shall be very slightly rounded off to furnish what is known as a 'knife-edge'.

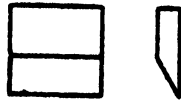
4.3 The radius on the working edge shall be uniform from end to end.

4.4 The working edge shall be finished by grinding and lapping.

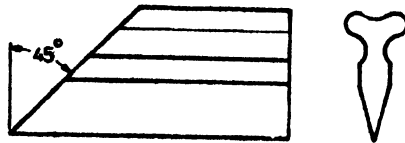
5. ACCURACY

5.1 When the straightedge is placed against a well-illuminated background, on a toolmakers' flat or on a high precision surface plate conforming to IS: 3510-1966*, no white light shall be visible at any point along its length. This test shall apply for any angle of application of the straightedge to the test plate up to 10° on either side of the normal. Straightedges up to and including 150 mm in length shall be tested on toolmakers' flats of next higher size and those longer than 150 mm on high precision surface plates.

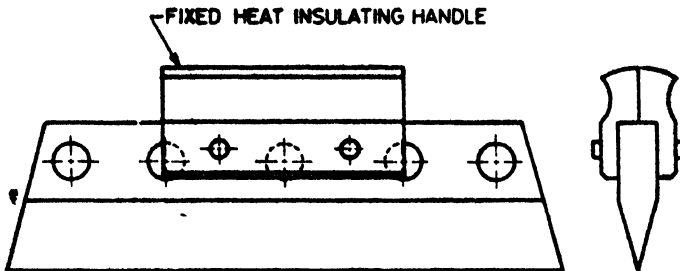
*Specification for toolmakers' flats and high precision surface plates.



LENGTHS 15 AND 25 mm



LENGTHS 50 TO 100 mm



LENGTHS 150 TO 300 mm

FIG. 1 TYPICAL SECTIONS OF TOOLMAKERS' STRAIGHTEDGES

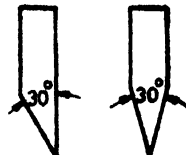


FIG. 2 INCLUDED ANGLE OF FACES

6. GLASS TEST PLATE

6.1 A black glass test plate may be supplied with each set of straightedges of lengths up to 150 mm.

6.2 The straightness of the reference face of this test plate shall be such that when a true straightedge is applied to the face against a well-illuminated background, no white light shall be visible at any point along its length.

7. HANDLES

7.1 Each straightedge of length from 150 to 300 mm inclusive shall have a permanently attached heat-insulating handle. Those of smaller sizes may also be provided with a detachable heat-insulating handle.

8. PACKING

8.1 Each straightedge, particularly sets of straightedges, may be supplied in a suitable protective case.

8.2 All surfaces of the straightedge shall be suitably protected against atmospheric corrosion before packing.

9. MARKING

9.1 Each straightedge should have legibly and permanently engraved upon it the manufacturer's name or trade-mark. Where it is possible, the size shall also be marked on the straightedge.

9.1.1 The toolmakers' straightedges may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephone : 27 01 31 (20 lines)

Telegrams : Manaksanstha

Regional Offices:

Telephone

Western : Novelty Chambers, Grant Road
Eastern : 5 Chowringhee Approach
Southern : C.I.T. Campus, Adyar

BOMBAY 400007 37 97 29
CALCUTTA 700072 23-08 02
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Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
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117/418 B Sarvodaya Nagar	KANPUR 208005	82 72
B.C.I. Bldg (Third Floor), Gandhi Maidan East	PATNA 800004	2 56 55